

GOVERNOR'S COUNCIL ON RECYCLING

A Briefing by the

WISCONSIN DEPARTMENT OF TRANSPORTATION

on

# **RECYCLED MATERIALS IN HIGHWAY IMPROVEMENTS**

The Governor's Council on Recycling has requested a response to four specific recommendations for the Department of Transportation. The recommendations are concerned with the use of recycled materials in highway improvements. The draft responses to the recommendations follow.

### **Recommendation 1**

"Work with the DNR and the Recycling Market Development Board (RMDB) to identify the priority materials for which recycling markets need to be developed or expanded, and use these priorities for DOT activities to promote the use of recycled materials in highway improvements."

### **Response 1**

A member of WisDOT was on the team that developed the Strategic Plan for the RMDB. WisDOT is now in the process of implementing the recommendations of the RMDB, e.g., developing a policy statement (see attachment), incorporating new language in our specifications and manuals to encourage recycling, investigating outreach mechanisms, conducting research, etc.

The DOT is willing to work with and consider the use of recycled materials in accordance with the priorities established by the DNR and RMDB.

The DOT has worked closely with the DNR on recycling of scrap tires, plastic, foundry sand, fly ash, and asphalt. In addition, when a recycled product comes to our attention, we have cooperated in evaluating and using the product in accordance with standard engineering practice. WisDOT is recognized as a national leader in recycling of asphaltic pavements, concrete pavements, and incorporating fly ash and foundry sand into highway improvements.

## Recommendation 2

"Establish a research program for the use of various materials in highway improvements."

## Response 2

WisDOT has an ongoing research program that actively pursues evaluation of recycled materials. In addition, we have a New Product and Method Assessment program that responsively evaluates recycled products. Examples of ongoing research:

- Crumb rubber modified asphaltic pavements
- Applications of bottom ash, boiler slag and steel slag
- Recycling of concrete pavements
- Evaluation of living noise barriers (using recycled plastic as the skeleton)
- Evaluation of recycled plastics in various applications
- Cold recycling of asphaltic pavements
- Use of recycled paper for erosion control
- Use of shredded or waste tires for highway applications
- Evaluation paper mill by-products for deicing
- Investigation of recycled aluminum sign stock
- Furthermore, WisDOT is an active participant in national organizations and studies investigating the use of recycled materials.
- The Federal Highway Administration's Pooled Fund Studies
- Accelerated Test of Crumb Rubber Modified Asphaltic Concrete (\$25,000 contribution)
- Evaluation of Recycled Materials for Roadsides (\$10,000 contribution)
- The National Cooperative Highway Research Program
- Appropriate Use of Waste and Recycled Materials in Highway Construction
- Recycling and Use of Waste Materials and By-Products in Highway Construction (a synthesis)
- Use of Recycled Rubber Tires in Highways (a synthesis)
- The American Association of State Highway and Transportation Officials
- involved in specification writing
- involved in use of blast furnace slag, recycled polyethelene pipe and recycled polyethelene geofabrics
- involved with recycled plastic signage and guardrail posts
- involved with HDPE pipe material specifications and design requirements

The new Transportation Product Evaluation Program and the Highway Innovative Technology Center. These are new programs/centers which are evaluating many new aspects of highway products, including the use of recycled materials.

### Recommendation 3.

"Establish a timetable for the development of specifications for the use of recycled material in highway improvement."

### Response 3.

WisDOT'S present timetable is:

Date	Event
Mid 1995	Modify the supplement specifications to encourage the use of recycled materials.
Mid 1995	Modify the Construction and Materials Manual and the Facilities Development Manuals to encourage the use of recycled materials.
1996	Modify the Standard Specifications to encourage the use of recycled materials.

An example of the changed wording in the Standard Specifications witnesses the DOT's intent. This rewording can have a profound impact upon a market driven recycling program.

**Old Wording:** "The Specifications contemplate the use of new, high quality materials throughout the work . . . to produce completed construction which is acceptable in every detail."

**New Wording** (Draft): The standard specifications have as their basis incorporation of the maximum possible amount of recovered materials, recyclable materials and recycled materials into the work, provided the Department determines such incorporation is consistent with the standard engineering practice.

New materials will be allowed when the Department determines the incorporation of recovered, recyclable or recycled materials would not be consistent with standard engineering practices.

All materials shall be of high quality and shall be incorporated into the work in a manner to produce completed construction acceptable in every detail.

The Department encourages the re-use of materials utilized during construction operations but not incorporated into the work.

WisDOT is moving away from the old "methods specifications" to performance based specifications and warranties. Thus, we will not generally tell the contractors what to use or how to use it. Performance based specifications allow recycled/recovered materials to be used anytime that they meet the applicable standards. The same is true for warranty projects. The determining factors governing the use of acceptable recycled products are market driven forces, i.e., availability, costs, etc.

Again, with performance based specifications and warranties, recycled materials can be used if the final product complies with standard engineering practice. Standard engineering practice includes consideration of: pavement performance, effects on human health, effects on the environment, impact on safety, recyclability of the final product, and life cycle cost analysis.

#### **Recommendation 4.**

"Establish an outreach program to provide assistance to local units of government and private contractors for the use of recycled material in highway improvements."

#### **Response 4.**

WisDOT's present outreach program includes the following:

Publication of Research Highlights (quarterly) which contains updates on research findings and publications. Distribution: DOT offices and districts, major industry groups, other states, and other interested groups.

The DOT has a good transportation library and a modern, nationwide, library information search capability. Thus, technology transfer capabilities are in place.

Distribution of Wisconsin research reports. Distribution: DOT offices and districts, Transportation Research Board, Wisconsin Reference and Loan Library, selected state DOT's, Wisconsin Counties Association, industry groups, and consulting engineers.

Distribution of the DOT's Facilities Development Manual, Standard Specifications and Supplemental Specifications. Distribution: DOT offices, contractors, consultants, industry groups, local governments, . . . The DOT serves as a model and our publications influence the entire highway industry within the State.

The use of the University of Wisconsin's Transportation Information Center. This center reaches some 1800 local government officials and is an excellent mechanism for local outreach.